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ABSTRACT

ECOSET was established to meet the demand from policy makers and the teaching community in the European Community (EC) Member States for evidence of the effectiveness of information technology in various learning situations in general and of various kinds of software in particular. The main goals of ECOSET were to identify organizations in the Member States that were involved in the evaluation of educational software; to inventory available evaluation instruments and procedures; and to compare these instruments with respect to evaluation techniques, cultural embeddedness, and their curricular dependencies. A survey of 19 organizations in 10 Member States was conducted to obtain this information. Based on the data collected, it was concluded that: (1) future cooperation between different countries of the EC has to concentrate on optimization of the objectivity and reliability of evaluation methods and procedures; (2) the underlying methods for evaluation in the Member States are relatively free of curricular and cultural influences and the Commission should set up a course on evaluation methods to be distributed to interested Member States to encourage unity in methodology; and (3) formative evaluation activities of 'exemplary' organizations should be formalized and documented for use by other EC countries. (Contains 4 references.) (ALF)

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EVALUATION ACTIVITIES REGARDING COURSEWARE IN EUROPE.

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Introduction.

The reason for establishing ECOSET is the considerable demand from policy makers and the teaching community for evidence of the effectiveness in various learning situations of information technology in general and items of software in particular. Thorough evaluation is complex and expensive and much saving of effort could be achieved if Member States set up joint evaluation programms, or use the outcomes of each others evaluation programmes in their own decision making. The Community can help to ensure that a full range of appropriate evaluation tools is available to Member States and that evaluators are skilled in their use and in the interpretation of the outcomes. In order to enable such cooperation it is at first necessary to collect data on the current state of evaluation activities in Europe. This was the main goal of ECOSET.

ECOSET aimed at:

1. an inventory of available evaluation instruments and procedures of application in the Member States;
2. a comparison of these instruments and procedures with respect to the evaluation techniques, their cultural embeddedness and their curricular dependencies.

Evaluation is seen as 'the planned collection of information so that informed judgements can be made about the educational value of the microcomputer and the courseware used within the classroom' (Weston, 1987).

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A first concern in this study was to identify the relevant organizations in the Member States involved in evaluation or in the implementation of evaluation procedures and instruments regarding educational software. For this identification process we primarily relied on the expertise of the Euryclee centres. We asked the Euryclee directors of the European countries for addresses of institutes or organizations in their country that are performing evaluation activities regarding the evaluation of educational software. We received addresses of 30 organizations. These organizations are the population of this research project. All the 30 organizations were sent a questionnaire and 19 organizations responded. After a first analysis of the returned questionnaires four significant actors in the Member States have been identified. Their sites were visited for in-depth interviewing, and discussion with their staff involved in evaluation procedures has taken place.

Inventory of the overall context.

In the ECOSET-project data on evaluation activities of 19 organizations in ten member states of the EG are gathered by questionnaire. Key persons in four organisations were interviewed about evaluation. The participating member states were Germany, the United Kingdom, Belgium, Denmark, France, Luxembourg, the Netherlands, Portugal, Spain and Italy. Four organizations are interviewed for more and detailed information about these activities. Ten of the nineteen organizations do as well summative as formative evaluations and four organizations only perform summative evaluation activities. Five organizations are involved in formative evaluation activities only. From the data it is evident that national and local government have a significant role as commissioners in the evaluation activities of the organizations in the different member states. In almost all of the organizations (14) the formative evaluation activities deal with own development projects. There is only one organization involved in own development projects whereas the evaluation activities are only summative. Three organizations are specialized in information dissemination, training and evaluation without any involvement in development activities.

	Number of organizations (n=19)
- *Financed by*	
* national government	14
* local governm.	5
* industry and trade	4
* others	5
- *Activities regarding educational software*	
* development	16
* publications	7
* information dissemen.	13
* training	15
* evaluation	19
* research	13
- *Expertise evaluators*	
* program. technical	8
* educational	19
* content matter	9
- *Kind of evaluation*	
* only summative	4
* only formative	5
* summat. & format.	10

Table 1. Overview of the overall context of the organizations.

Summative evaluation

The summative evaluation activities in the member states vary from a critical appraisal of a piece of courseware to extensive in-depth testing. Three groups of organizations are distinguished. The first group does not use formal instruments. The data indicate that this group is more or less on the line of product reviews of educational software. A second group (5 organizations) is using formal instruments, but the evaluation in real classroom situations is not a standard procedure. The third group of organizations uses formal instruments and the educational software is tried out in real situations. There are indications of differences between group 1 and 2 in the relation between development activities and the target group for the results. A remarkable aspect is the difference in dissemination of results between group 2 and group 3. Teachers in both groups are an important target group for the results, but in group 2 there is only one organization using educational or other magazines for the dissemination of the results. In group 3 all the organizations use magazines for this purpose.

	Number of organizations (n=14)
- *Evaluation activities commissioned by*	
* government	9
* local authorities	4
* industry and trade	2
* others	2
- *Involvement of publishing companies.*	7
- *Training for evaluators*	6
- *Evaluation in classroom situations*	7
- *Assessment of learner effectiveness.*	8
- *Use of specific criteria for selection of courseware*	10

Table 2. Overview of some methods and procedures.

For the summative evaluation activities, formal instruments are used by eleven organizations. Checklists are used as instruments by six organizations. They are used mostly by teachers or by teachers and subject matter specialists. Seven organizations use questionnaires for teachers. Four of them use a combination of questionnaires and checklists. At two organizations a questionnaire is also filled in by subject matter specialists and at one organization they have a special questionnaire for students. Prestructured diaries are used at one organization by teachers and specialists. Nine out of fourteen organizations developed their own instruments, the others use already existing instruments. Specific instruments for specific courseware are used by five organizations.

Formative evaluation

Fifteen organizations perform formative evaluation activities in the decision as well as in the design & development phase. Nine of them are also involved in evaluation activities in the dissemination phase. In the decision phase thirteen organizations do comparisons with other products and eleven of them are looking in the technical feasibility of products. Ten organizations do needs analysis studies. As evaluation activities in the design & development phase the evaluations of pre-releases of the software and releases of the

documentation are most often mentioned. Other activities are evaluations of prototypes and continuing consultancy during the design and technical implementation stages. Products most often mentioned as being used as input for activities in this phase are the descriptions of the ideas behind the product, global prototypes and product definitions. In the dissemination phase three organizations assess learner results as one of their evaluation activities. In the group of organizations performing formative evaluation activities two elements are remarkable. Organizations with few (<6) evaluation activities hardly train their evaluators. Almost all the other organizations give training to in house evaluators, subject matter specialists and/or teachers. If the number of evaluation activities gives an indication of the role of evaluation in the development process, you might say that those organizations also value training for evaluators as a necessity for good evaluations. The organizations with a lot of evaluation activities all use data of own or other observers. The aspect of training may also be connected with this fact. For observations the 'inter subjectivity' is an important factor. Inter subjectivity you will get by training your observers.

Concluding comments.

The summative evaluation activities in the different member states can be placed on a continuum with on one side subjective, normative evaluation and on the other side the criterion-based approach (Dudley Marling, Owston, Searle, 1988). With a simple 'break-down' procedure we made rough distinction in three groups of evaluation methodologies used in the European organizations, similar to three prototypical models of types of evaluation as proposed by Duchastel (1987). The first group are three organizations that do not use formal instruments for their evaluation activities. These organizations are more or less on the line of product reviews of educational software. A second group are those organizations (5) that use formal instruments but the evaluation in real classroom situations is not a standard procedure. That does not mean that teachers are not involved in the

evaluation activities. These organizations all use teachers as participants in the evaluation activities. This group probably has a more systematic way of evaluation with sets of mental categories and product characteristics with which they examine a software product. The third group of organizations (6) uses formal instruments and evaluates in real classroom situations as part of the standard evaluation procedure. The above mentioned division in evaluation activities does not mean that there are a lot of similarities in the organizations in one group. There can be for instance a lot of difference in the specifications of criteria used in the instruments, the number of teachers evaluating the program, the main function of the results etc.

Formative evaluation activities are standard at those 15 organizations that are engaged in software development. At two organizations the evaluators are independent subcontractors for parts of the evaluation activities in the decision phase and in the design & development phase. In the dissemination phase there is only one organization responsible for evaluation activities as independent subcontractor. In the decision phase there is one organization and in the design & development phase there are three organizations where the evaluators are as well member of the development team and independent subcontractor. Although preferable (Sparrow, 1973, Watson, 1987) it is not common in the organizations to have independant evaluators.

The data of the questionnaire do not give insight in the standardization of the different evaluation procedures in the development process. The interviews give an indication that formative evaluation activities differ per project and that procedures and methods of evaluation are planned and developed during the development process, instead of planned beforehand. Only one organization in the interviews indicate that the evaluation activities during the development process are part of a regularly applied quality assurance plan.

CONCLUSIONS AND RECOMMENDATIONS

Some conclusions of the ECOSET-project are:

* Future cooperation between the different countries of the EC have to concentrate on the optimization of the objectivity and the reliability of the evaluation methods and procedures. Although there are some parts in the procedure that have their cultural and curricular boundaries, there are other parts where cooperation is possible, for instance on the terrain of operational definitions of program characteristics, on test consistency and validity and on the development of procedures, tools and methodologies. The basis for cooperation should be a consensus about the target group and the purpose of the summative evaluation, the questions 'why?' and 'for whom?' (Smith and Keep, 1988).

* The underlying methods for evaluation in the Member States are relatively free of curricular and cultural influences. This implies that exchange of information between the Member States can take place in principle without to much difficulty in terms of 'education-free' exchanges. From the experiences of the project it is recommended that the Commission stimulates setting up a course on evaluation methods to be distributed to interested Member States. Through such a course, unity in methodology will evolve, encouraging similar approaches towards evaluation resulting in compatibility of evaluation outcomes.

* In regard to the formative evaluation activities it seems logical that development projects and developing organizations will make use of the expertise and experiences of those organizations that perform a wide variety of formative evaluation activities in the different phases of the development process. One of the main conditions should be that the evaluation activities of those 'exemplary' organizations are formalized methods and procedures with good documentation, for instance in a 'quality assurance plan', of the

different evaluation activities. It will facilitate the transfer of expertise to other EC countries.

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